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(71)Applicant : NIPPON DENSO CO LTD

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(72)Inventor : ITO HIROYASU

SUZUKI YASUTOSHI

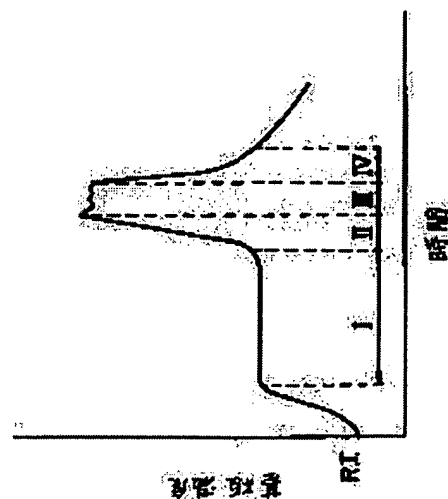
HARA KUNIIHIKO

(54) HEAT TREATMENT OF ION IMPLANTED SEMICONDUCTOR

(57)Abstract:

PURPOSE: To perform an effective annealing treatment by a method wherein an infrared lamp is employed and a specified heating schedule is adopted.

CONSTITUTION: An ion implanted semiconductor substrate is retained in the atmosphere of an inert gas such as nitrogen gas. Preheating is carried out at a temperature of approximately 400W600°C for a period of 10W30min by lighting up an infrared lamp for preheating. Both the sides of the semiconductor are instantaneously heated at a high temperature of approximately 700W1,000°C for a period of 5W60sec at a high heating rate of 50°C/sec or more by lighting up the infrared lamp for high-speed and high-temperature heating. Thereupon, while the cooling rate is controlled at a level of 50°C/sec or more, the semiconductor is quickly cooled down to approximately 400W600°C. The electrical activation of the impurity in the ion-implanted layer occurs at a value extremely approximate to the LSS theory



regardless of the amount of the implanted ions, which fact is favorable in terms of characteristics.

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